

# UNCLASSIFIED

Exhibit R-2 FY 2000 President's Budget RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: February 1999

BUDGET ACTIVITY: 5      PROGRAM ELEMENT: 0604784N      PROJECT NUMBER: X1300  
PROGRAM ELEMENT TITLE: Distributed Surveillance System      PROJECT TITLE: Advanced Deployable System

(U) COST: (Dollars in Thousands)

PROJECT NUMBER & TITLE	FY 1998 ACTUAL	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	FY 2004 ESTIMATE	FY 2005 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
Advanced Deployable System X1300	40,095	49,167	14,910	20,933	35,641	33,318	27,145	44,026	54,034	430,115
Total	40,095	49,167	14,910	20,933	35,641	33,318	27,145	44,026	54,034	430,115

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The Advanced Deployable System (ADS) is an undersea surveillance system composed of distributed sensors that can be rapidly and unobtrusively deployed in regional contingency areas for use against enemy submarines and in support of littoral warfare. It is designed to detect and track modern diesel electric and nuclear submarines, as well as provide the capability for tracking surface ships and detecting sea minelaying. ADS possesses great flexibility with respect to laydown options, ranging from single barrier to large area fields. It has built upon test experience with distributed sensor fields in shallow noisy water, and used collected data for processing verification. ADS utilizes conventional acoustic sensors and will incorporate All-Optical technology as a secondary developmental effort. ADS incorporates processing technologies and advanced sensors and technologies from other related programs.

1. (U) FY 1998 ACCOMPLISHMENTS:

- (U) (\$17,103) Completed assembly and integration of two arrays (nodes) for the Integrated Article Test (IAT). Built, integrated and tested prototype Processing & Analysis Subsystem (PAS) vans for IAT. Conducted Single Node Test (SNT) and IAT. Began assembly and integration of the Multi-Node system for the Multi-Node Test (MNT), incorporating lessons learned from the previous tests. Completed planning for the Fleet Exercise Test (FET). Continued cable survivability and alternative platform deployment capability risk reduction efforts.
- (U) (\$626) Completed Early Operational Assessment (EOA) (OT-1A). Initiated detailed planning for the Operational Assessment (OT-1B) in conjunction with the FET.
- (U) (\$6,802) Built, integrated and tested Adaptive Beamformer software. Completed analysis of IAT data. Prepared MNT and FET test plan inputs. Initiated and completed ILS planning for MNT and FET tests. Initiated the Common Processor Study to assess current and future PAS alternatives.

R-1 Shopping List - Item No Page 128-1 of 128-10

Exhibit R-2,RDT&E Budget Item Justification

# UNCLASSIFIED



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- (U) (\$1,110) Continued to manage ADS program definition and risk reduction through monitoring of contractor and government technical, schedule, and cost performance. Initiated Analysis of Alternatives (AOA) plan development and other MS II program documentation update requirements. Initiated planning for Engineering and Manufacturing Development (EMD) Request for Proposal (RFP) package requirements.
- (U) (\$629) Updated Naval Command, Control, Communications, Computers, Intelligence, Surveillance and Reconnaissance (C4ISR) implementation guidance. Updated Naval C4ISR mission to incorporate an overarching operational, systems, technical and information architecture. Conducted associated analyses and studies.
- (U) (\$7,360) Testing and packaging of the All-Optical Deployable system into ADS deployment canisters. Conducted design verification tests. Alternative design approaches were explored. Determined deployment platform interface requirements. Determined the interface requirements with the Advanced Deployable System (ADS) Processing and Analysis Segment. Developed comprehensive test plans from the initial Pool Tests through integrated system At-Sea tests. Platform "F" conducted design studies and system architectural tradeoffs for Fit test.
- (U) (\$6,465) Developed signal processing and detection algorithms for the ADS. Engineering, software modification, and analysis of algorithms to develop and integrate the Field Processing component of the Advanced Deployable System (ADS) Processing and Analysis Segment (PAS) were performed in support of ADS build demonstrations, and fielded testing. Algorithm development was consistent with analysis of requirements, as well as data analysis performed using field data. Efforts were directed to improve the current PAS feature extraction, source set formation, and event detection to support ADS PAS Field Processing performance.

## 2. (U) FY 1999 PLAN:

- (U) (\$22,439) Complete multi-node UWS development, assembly, and integration. Integrate UWS with PAS and conduct test readiness review. Conduct MNT and FET. Analyze MNT and FET data and perform system performance assessment.
- (U) (\$4,632) Analyze data collected during MNT and FET and support any additional development and/or operational testing. Conduct Operational Assessment (OT-1B).
- (U) (\$12,137) Conduct and complete the AOA. Participate in Navy exercises using ADS arrays to collect target data. Support MNT and FET performance analysis. Develop all ILS products, plans and documents to support Milestone II decision.

R-1 Shopping List - Item No Page 128-2 of 128-10

Exhibit R-2,RDT&E Budget Item Justification

# UNCLASSIFIED



# UNCLASSIFIED

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- (U) (\$1,977) Continue to manage ADS program through monitoring of contractor and government technical, schedules, and cost performance. Complete MS II program documentation requirements and conduct MS II review. Prepare and issue EMD Phase RFP.
- (U) (\$3,991) Initiate development of data fusion algorithms associated with tracking surface shipping required in ADS's Phase I exit criteria.
- (U) (\$3,991) Conduct AODS design verification tests. Conduct design studies and system architectural tradeoffs for advanced remotely-powered AODS variant. Perform feasibility test and in-water demonstration of Platform "F" delivery capability of AODS.

3. (U) FY 2000 PLAN:

- (U) (\$10,100) Initiate engineering and manufacturing development. Initiate manufacturing technology /cost reduction engineering analysis and process design for array assembly and integration. Initiate engineering development of installation subsystem. Incorporate lessons learned from FET into PAS.
- (U) (\$4,110) Conduct sea tests and system engineering analysis of array design options for P<sup>3</sup>I program. Develop ILS products to support system production and fielding.
- (U) (\$700) Award EDM contract. Manage ADS through monitoring of contractor and government technical, schedule, and cost performance.

R-1 Shopping List – Item No Page 128-3 of 128-10

Exhibit R-2,RDT&E Budget Item Justification

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## B. (U) PROGRAM CHANGE SUMMARY:

	<u>FY 1998</u>	<u>FY99</u>	<u>FY00</u>
President's Budget FY99	41,586	42,017	42,920
Adjustments from FY99 PRESBUDG	(1,491)	7,150	(28,010)
President's Budget FY00	40,095	49,167	14,910

(U) Schedule: FY98 reduction due to SBIR and Congressional Undistributed reductions. FY99 increase due to Congressional adds to continue development of All-Optical technology and processing automation. FY00 decrease resulted from program restructuring delaying OPEVAL two years, with procurement delayed from FY03 until FY05.

## B. (U) OTHER PROGRAM FUNDING SUMMARY: (Dollars in Thousands)

	<u>FY 1998</u>	<u>FY2005</u>	<u>TO</u>	<u>TOTAL</u>
	<u>ESTIMATE</u>	<u>ESTIMATE</u>	<u>COMPLETE</u>	<u>PROGRAM</u>
OPN# 2221	N/A	44,506	CONT	CONT

(U) RELATED RDT&E: Not applicable.

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## D. (U) ACQUISITION STRATEGY:

	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>
Program Milestones		MS II 4 <sup>th</sup> Qtr	
Engineering Milestones	ISR 3 <sup>rd</sup> Qtr Complete SNT 2 <sup>nd</sup> Qtr Complete IAT 2 <sup>nd</sup> Qtr	Deliver Prototype 2 <sup>nd</sup> Qtr	
T&E Milestones	Complete EOA (OT-1A) 2 <sup>nd</sup> Qtr	MNT 2nd Qtr FET 2 <sup>nd</sup> -3 <sup>rd</sup> Qtr OT-1B 2 <sup>nd</sup> -3 <sup>rd</sup> Qtr	
Contract Milestones	Start EMD RFP 2nd Qtr	Complete RFP 2 <sup>nd</sup> Qtr	Award EMD Contract

## E. (U) SCHEDULE PROFILE:

See paragraph D above.

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Exhibit R-3 FY 2000 President's Budget RDT&E,N COST ANALYSIS

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## A. (U) PROJECT COST BREAKDOWN: (\$ in thousands)

Project Cost Categories	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>
a. Prime Mission Product	17,103	22,439	10,100
b. Program Management	1,110	1,977	700
c. System Engineering /ILS	6,802	12,137	3,310
d. Test & Evaluation	626	4,632	800
e. ADS AODS (X2445)	7,360	3,991	0
f. ADS Algorithm Development (X2446/X1300)	6,465	0	0
g. ADS Automation and Data Fusion (X2652)		3,991	
h. C4ISR Mission Requirements	629	0	0
Total	40,095	49,167	14,910

R-1 Shopping List – Item No Page 128-6 of 128-10

Exhibit R-3,Project Cost Analysis

# UNCLASSIFIED



# UNCLASSIFIED

## B. (U) BUDGET ACQUISITION HISTORY AND PLANNING INFORMATION (\$ in thousands)

Exhibit R-3 Cost Analysis (Page 1)										
APPROPRIATION/BUDGET ACTIVITY: RDT&E,N / BA 5			PROGRAM ELEMENT: 0604784N							
Cost Categories	Contract Method & Type	Performing Activity & Location	Total FY98 & Prior Cost	FY99 Cost	Award Date	FY2000 Cost	Award Date	Cost To Complete	Total Cost	Target Value of Contract
Prime Mission Product Development	C/CPAF	LMFS Manassas, VA	52,880	20,629	9/95				73,509	73,509
Prime Mission Product Development	C/CPAF	TBD				5,000	11/99	61,000	66,000	66,000
Government Engineering Support	WX	SSC-San Diego San Diego, CA	21,000	4,136	10/98	1,800	10/99	11,200	38,136	
Engineering Supt Services	C/CPFF	AHA Rockville, MD	2,000	900	10/98				2,900	2,900
Engineering Supt Services	SS/CPFF	APL/JHU Laurel, MD	2,455	1,050	10/97				3,505	3,505
Engineering Supt Services	SS/CPFF	ARL/UT Austin, TX	3,548	1,300	10/98	900	10/99	5,200	10,948	10,948
Software Development	C/CPFF	DSR Fairfax, VA	2,050	1,500	10/98				3,550	3,550
Software Development		TBD				2,500	11/99	30,700	33,200	35,700
OTHER CONTRACTS			5,613	5,972	<sup>1</sup>	300	<sup>1</sup>	1,400	13,285	<sup>1</sup>
OTHER ACTIVITIES			14,277	5,667	10/98	2,710	10/99	38,763	61,417	
Subtotal Product Development			103,823	41,154		13,210		148,263	306,450	
Remarks: 1) Various contracts with different award dates and total cost values.										

UNCLASSIFIED



# UNCLASSIFIED

B.(U) BUDGET ACQUISITION HISTORY AND PLANNING INFORMATION (\$ in thousands)

Exhibit R-3 Cost Analysis (Page 2)										
APPROPRIATION/BUDGET ACTIVITY: RDT&E,N / BA 5				PROGRAM ELEMENT: 0604784N						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total FY98 & Prior Cost	FY99 Cost	Award Date	FY2000 Cost	Award Date	Cost To Complete	Total Cost	Target Value of Contract
Contractor Engineering Support	C/CPFF	AMRON San Diego, CA	1,417	470	9/98				1,887	8,233
Government Engineering Support	WX	SSC-San Diego San Diego, CA	6,174	550	10/98				6,724	
		OTHER CONTRACTS	11,592	385	<sup>1</sup>	300	<sup>1</sup>	2,200	14,477	<sup>1</sup>
		OTHER ACTIVITIES	353	460	10/98	100	<sup>1</sup>	28,117	29,030	
Subtotal Support			19,536	1,865		400		30,317	52,118	
Remarks:										
1) Various contracts with different award dates and total cost values.										

UNCLASSIFIED



# UNCLASSIFIED

## B. (U) BUDGET ACQUISITION HISTORY AND PLANNING INFORMATION (\$ in thousands)

Exhibit R-3 Cost Analysis (Page 3)										
APPROPRIATION/BUDGET ACTIVITY: RDT&E,N / BA 5			PROGRAM ELEMENT: 0604784N							
Cost Categories	Contract Method & Type	Performing Activity & Location	Total FY98 & Prior Cost	FY99 Cost	Award Date	FY2000 Cost	Award Date	Cost To Complete	Total Cost	Target Value of Contract
Developmental Test and Evaluation		OTHER CONTRACTS	6,233	811	<sup>1</sup>		<sup>1</sup>	500	7,544	<sup>1</sup>
Developmental and Operational Test and Evaluation	WX	SSC-San Diego San Diego, CA	7,291	2,996	10/98	600	10/99	400	11,287	
Developmental and Operational Test and Evaluation		OTHER ACTIVITIES	3,871	826	10/98			3,300	7,997	
Subtotal T&E			17,395	4,633		600		4,200	26,828	
Remarks:										
1) Various contracts with different award dates and total cost values.										

UNCLASSIFIED



# UNCLASSIFIED

## B. (U) BUDGET ACQUISITION HISTORY AND PLANNING INFORMATION (\$ in thousands)

Exhibit R-3 Cost Analysis (Page 4)										
APPROPRIATION/BUDGET ACTIVITY: RDT&E,N / BA 5			PROGRAM ELEMENT: 0604784N							
Cost Categories	Contract Method & Type	Performing Activity & Location	Total FY98 & Prior Cost	FY99 Cost	Award Date	FY2000 Cost	Award Date	Cost To Complete	Total Cost	Target Value of Contract
Program Management Support	C/CPFF	AMRON San Diego, CA	4,407	870	9/98				5,277	8,233
Program Management Support		OTHER CONTRACTS	4,689	220	<sup>1</sup>	600	<sup>1</sup>	4,200	9,709	<sup>1</sup>
Program Management Support		OTHER ACTIVITIES	1,091	425	10/98	100	<sup>1</sup>	28,117	29,733	<sup>1</sup>
Subtotal Management			10,187	1,515		700		32,317	44,719	
Total Cost			150,701	49,167		14,910		215,097	430,115	
Remarks:										
1) Various contracts with different award dates and total cost values.										

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